The Equation of State for Skeleton Hydrocarbons

I.I. Adamenko [C]
Molecular Physics Department, Kiev National Taras Shevchenko University, Kiev, Ukraine

K.O. Moroz [S]
Department of Molecular Physics, Kiev National Taras Shevchenko University, Kiev, Ukraine

I.V. Beleyevych
Molecular Physics Department, Kiev National Taras Shevchenko University, Kiev, Ukraine

Thermodynamic properties of liquid pinane, α-pinene and 1-3-dimethyladamantane were investigated experimentally in the range of pressures from 0.1 to 180 MPa and in the range of temperatures from 313 to 413 K. We calculated the isothermal modulus of elasticity (K_T), isobaric expansivity (α_P), isothermal deviation of entropy ($T\Delta S$), enthalpy (ΔH), internal energy (ΔU) and isobaric-isothermal Gibbs potential (ΔG). Thermodynamic properties of investigated liquids were compared to those of aromatic hydrocarbons, which were studied earlier. We have shown that the PVT data of investigated liquids are described by the Tait equation of state. The parameters of this equation were analyzed depending on molecular characteristics and on the temperature.